

REMARKS

Before discussing the amendment and how the claimed invention distinguishes over the cited prior art, Applicant notes that the latest Office Action refers to claims 1-5. The present application was filed with 25 claims and all claims have been maintained up until the cancellation of claims 3 and 4 in the present amendment. Accordingly, claims 1, 2, and 5-25 remain in the present application and consideration of all such claims to the extent that they were not considered before is respectfully requested.

Applicant has filed concurrently herewith an Information Disclosure Statement to formalize the citation of various references which were cited in the present application. Entry of the Information Disclosure Statement and is respectfully requested.

The claims of the application have been rejected over the Musser publication. The reference is stated to teach that caterpillar saliva reduces the amount of toxic nicotine released by the tobacco plant and that both glucose oxidase and hydrogen peroxide provide the same effect. The rejection is hereby traversed and reconsideration is respectfully requested.

The amendment to the claims submitted herein limits the nicotine reducing agent to glucose oxidase. Accordingly, claims 3 and 4 have been canceled.

Glucose oxidase (GOX) is identified at page 10, lines 14-15 as the preferred nicotine reducing agent of the present invention. All of the remaining claims have been amended accordingly. Entry of the amendment is therefore deemed proper and is respectfully requested.

The present invention is directed to a method as well as tobacco plants treated in accordance with the method in which the synthesis of nicotine in the tobacco plant is sufficiently inhibited so that the resulting nicotine content in the plant is sufficient to yield a non-addictive level of nicotine in the central nervous system blood plasma of the user. This threshold level is about 0.01 mg/g of the tobacco plant as indicated on page 3, lines 3-5 and again in the first full paragraph on page 9 of the present application. Thus, the claims of the present application require that the tobacco plant be treated with glucose oxidase in a manner sufficient to reduce the nicotine content to the levels described above. It is these levels that yield a non-addictive level of nicotine in the central nervous system blood plasma as described in U.S. Patent No. 5,713,376 (column 3, lines 38-53).

Musser compares the effect of a control group of caterpillars with a test group on tobacco plants. Feeding the test group of caterpillars with intact spinnerets enables glucose oxidase in the saliva to contact the tobacco plants, reducing foliar nicotine levels by over 26% compared with feeding by the control group of caterpillars with modified spinnerets in which glucose oxidase can not contact the plants. While a reduction in nicotine content is shown, the reduction of nicotine in

tobacco plants by 26% is insufficient to achieve the objects of the present invention. These results should be compared with Examples 3 and 4 of the present application in which there is significantly greater reductions in the amount of nicotine present in the treated leaves.

Example 3 shows that multiple treatments of the tobacco plants could achieve significantly greater reduction in nicotine levels as compared to Musser. This is surprising because Musser teaches only a 26% reduction in nicotine levels utilizing H. Zea with normal spinnerets. One would not expect to get a significant reduction in nicotine levels using a second or third treatment because if one treatment results in only a 26% reduction then a second treatment would be expected to result only a further 26% reduction ( $0.26 \times 0.26 = 6.75\%$ ) or only about an additional 7% reduction of nicotine. It would therefore be surprising to find that multiple treatments could get the nicotine level in tobacco plants down to a level in which non-addictive tobacco products could be made.

In addition, there is no teaching or suggestion in Musser of employing concentrated solutions of glucose oxidase nor the results that may be achieved thereby. Accordingly, while it is acknowledged that Musser teaches that caterpillar saliva can reduce nicotine levels in tobacco plants, its reduction is insufficient to achieve the objects of the present invention.

The claims of the application are again rejected as unpatentable over Rosen (U.S. Patent No. 3,851,653) or the combined teachings of Murray (U.S. Patent No. 6,054,318) and Felton (U.S. Patent No. 6,303,326). The rejection is hereby traversed and reconsideration is respectfully requested.

The basis of the rejection is that Rosen treats tobacco with hydrogen peroxide. The present claims have been amended to limit the nicotine reducing agent to glucose oxidase. On this basis alone, the rejection based on Murray can no longer stand.

As previously explained, Rosen teaches treating tobacco with an aqueous solution containing hydrogen peroxide and catalase in an amount sufficient to cause decomposition of the hydrogen peroxide into gaseous components including oxygen. While these gaseous components increase the volume of the treated tobacco, they do not reduce the amount of nicotine in the tobacco plant. An increase in the volume of the tobacco plant logically results in a decrease in the amount of nicotine per unit volume. However, there is no reduction in the actual nicotine content of the tobacco plant.

It is noted that some of the oxygen (not hydrogen peroxide) produced by the decomposition of hydrogen peroxide reacts with the nicotine to convert the same to a non-nicotine compound. However, there is no teaching or suggestion of the use of glucose oxidase in Rosen. Furthermore, there is no indication in Rosen any

reduction of nicotine content approaches the low levels of nicotine required in the present claims.

The Office Action states that Murray and Felton both address the effect of the glucose oxidase on plants. The Office Action further states that while neither Murray nor Felton appear to recognize any effect on nicotine concentration in tobacco plants which are exposed to increase levels of glucose oxidase, it would appear that reduced nicotine production would necessarily occur. This ground of rejection is hereby traversed and reconsideration is respectfully requested.

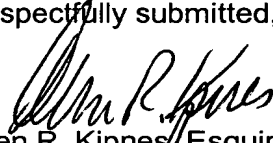
Applicant submits that it is not the first to discover that glucose oxidase has an effect on nicotine production in plants. However, neither Murray nor Felton teach or suggest applying glucose oxidase to tobacco plants to an extent that nicotine levels can be reduced to a point where a resulting tobacco product can be made with a non-addictive level of nicotine. More specifically, the references do not teach or suggest a material feature of the present invention, namely, a reduction in nicotine level by the use of glucose oxidase sufficient to reduce the level of nicotine in a resulting tobacco product to a non-addictive level. Accordingly, the present invention clearly distinguishes over Murray and Felton alone or in combination.

In view of the foregoing, Applicants submit that the present application is in condition for allowance and early passage to issue is therefore deemed proper and is respectfully requested.

ARK:jsg080106/1631004.AMD-3

It is believed that no fee is due in connection with this matter. However, if any fee is due, it should be charged to Deposit Account No. 23-0510.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Allen R. Kipnes", is written over the typed name and title.

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